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TIBOGA萃取液闪法测定高放废液中的~(89,90)Sr

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摘要 研究了二酰胺 (TIBOGA)萃取液闪法快速测定高放废液中89,90 Sr的方法。将模拟高放废液酸度调节为1mol/LHNO3,加入适量Fe(NH2 SO3)2 溶液 ,用TRPO 煤油溶液萃取 2次 ,以去除模拟高放废液中的Y3+和其它相关杂质元素 ,于室温下以等体积的TIBOGA 正辛醇 煤油溶液定量萃取Sr,用液闪法测定89,90 Sr的活度。样品的分析周期为 1h ,方法检测限为 1.7kBq/L ,精密度为2 % (n=6) ,放化回收率为 97%~ 10.4 %。

关键词 [高放废液](#) [TRPO](#) [TIBOGA](#) [89](#) [90Sr](#) [液闪法](#)

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Activity Determination of ~(89,90) Sr in HLLW by TIBOGA Extraction-liquid Scintillation Counting Method

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Abstract Activity determination of 89,90 Sr in HLLW by N,N,N',N' tetraisobutyl 3 oxo glutaramide(TIBOGA) extraction liquid scintillation counting method is described. First, actinide elements and other related elements are removed from simulated HLLW by TRPO kerosene extraction. Then, Sr 2+ is extracted into TIBOGA n octyl alcohol kerosene phase. The above organic phase is washed by mixed solution of 0.01 mol/L Fe(NH2SO3)2 2 mol/L HNO3 in order to eliminate disturbance of Ru 3+ . Finally, activity of 89,90 Sr in the organic phase is determined by liquid scintillation counting method. The determination limit of the method is 1.7 kBq/L, the precision is 2 %, the recovery is higher than 97 %, respectively. Gross decontamination coefficient of related elements in simulated HLLW are as follows:>1×10⁶ for UO₂²⁺, Th⁴⁺, Pu⁴⁺, PuO₂²⁺, Np⁴⁺, Co²⁺ as well as Cs⁺; >3×10⁵ for NpO₂²⁺; >3×10⁴ for Zr⁴⁺; ≥2×10⁴ for TcO₄⁻, Pu³⁺ and PaO₂⁺; >3×10³ for Ru(NO)₃⁺; >1×10³ for RE; >7×10² for Am³⁺.

Key words [HLLW](#) [TRPO](#) [TIBOGA](#) [89,90 Sr](#) [liquid scintillation counting method](#)

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